RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical
Information Center (STIC) no errors detected.

Application Serial Number: _10/533,241_

Source: _1FwP_

Date Processed by STIC: _8/8/06_

ENTERED

IFWP

RAW SEQUENCE LISTING   DATE: 08/08/2006
PATENT APPLICATION: US/10/533,241   TIME: 09:31:41

Input Set : F:\56446-20055.01 - Seqlist.txt
Output Set: N:\CRF4\08082006\J533241.raw

```
     4 <110> APPLICANT: CALLEN, Walter
     6 <120> TITLE OF INVENTION: XYLOSE ISOMERASES, NUCLEIC ACIDS ENCODING THEM AND METHODS
     7       FOR MAKING AND USING THEM
     9 <130> FILE REFERENCE: 564462005501
    11 <140> CURRENT APPLICATION NUMBER: US 10/533,241
C-->12 <141> CURRENT FILING DATE: 2005-04-29
    14 <150> PRIOR APPLICATION NUMBER: PCT/US03/34008
    15 <151> PRIOR FILING DATE: 2003-10-23
    17 <150> PRIOR APPLICATION NUMBER: US 60/424,649
    18 <151> PRIOR FILING DATE: 2002-11-06
    20 <160> NUMBER OF SEQ ID NOS: 4
    22 <170> SOFTWARE: FastSEQ for Windows Version 4.0
    24 <210> SEQ ID NO: 1
    25 <211> LENGTH: 1335
    26 <212> TYPE: DNA
    27 <213> ORGANISM: unknown
    29 <220> FEATURE:
    30 <223> OTHER INFORMATION: obtained from an environmental sample
    32 <400> SEQUENCE: 1
    33 atgactgagt tctttccaga gatcccgaag atacagtttg aaggtaaaga gagcacaaat      60
    34 ccatttgcgt tcaagttcta cgatccaaac gaggtgatcg acggaaaacc tctcaaggac     120
    35 catctgaagt tctcagttgc attctggcac accttcgtga acgaggggag agatcccttc     180
    36 ggagatccaa cagccgaccg accctggaac aagtacacag accctatgga caaagccttt     240
    37 gcaagggtgg acgccctctt tgaattctgt gaaaaactca acatcgagta cttctgtttt     300
    38 cacgacaggg acatagctcc tgaaggaaag actctgaggg agacaaacaa gatcctggac     360
    39 aaggtcgtgg agaggatcaa agagagaatg aaagacagca acgtaaaact cctctggggt     420
    40 actgcgaatc tcttttctca tccaaggtac atgcacggtg cggcgacaac ctgtagtgct     480
    41 gatgtcttcg cctacgcggc agcacaggtg aagaaagccc ttgagatcac aaaagagctt     540
    42 ggaggagaag ggtacgtctt ttggggtgga agagaagggt acgagacact cctcaacacg     600
    43 gatctggatc ttgaacttgg aaacctcgct cgcttcctca gaatggctgt ggattacgca     660
    44 aagaagatag gtttcaacgg ccagtttctc atcgagccta aaccgaagga accaacgaag     720
    45 catcagtacg acttcgatgt tgcgacggct tacgccttcc tgaagagtca cggtctcgat     780
    46 gagtatttca aattcaacat cgaagcgaac catgccacac ttgctggtca caccttccag     840
    47 cacgaactga ggatggcaag aattcttgga aaactcggca gcatcgacgc gaaccagggg     900
    48 gaccttctgc tcggctggga caccgaccag ttcccaacaa acgtctacga cacaactctt     960
    49 gccatgtatg aagtgataaa agcgggtggg tttacaaaag gtggtctcaa cttcgatgca    1020
    50 aaggtgagaa gagcttctta caaggtggaa gatctcttca tcgggcacat agcaggaatg    1080
    51 gatactttcg cactcggttt caaaatagcc cacaaacttg taaagacggg tgtgttcgac    1140
    52 aagttcattg aagaaaaata caaaagtttc agagagggca tcggaaaaga gatcgttgaa    1200
    53 ggaaaggcag attttgaaaa gctggaagct tatataatag acaaggaaga gatggagctt    1260
    54 ccatctggaa agcaggagta tttggaaagt ctcctcaaca gctacatagt gaaaacgatc    1320
    55 tccgagttga ggtga                                                    1335
    57 <210> SEQ ID NO: 2
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RAW SEQUENCE LISTING   DATE: 08/08/2006
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Input Set : F:\56446-20055.01 - Seqlist.txt
Output Set: N:\CRF4\08082006\J533241.raw

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58 <211> LENGTH: 444
59 <212> TYPE: PRT
60 <213> ORGANISM: unknown
62 <220> FEATURE:
63 <223> OTHER INFORMATION: obtained from an environmental sample
65 <400> SEQUENCE: 2
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67 1               5                   10                  15
68 Glu Ser Thr Asn Pro Phe Ala Phe Lys Phe Tyr Asp Pro Asn Glu Val
69             20                  25                  30
70 Ile Asp Gly Lys Pro Leu Lys Asp His Leu Lys Phe Ser Val Ala Phe
71         35                  40                  45
72 Trp His Thr Phe Val Asn Glu Gly Arg Asp Pro Phe Gly Asp Pro Thr
73     50                  55                  60
74 Ala Asp Arg Pro Trp Asn Lys Tyr Thr Asp Pro Met Asp Lys Ala Phe
75 65                  70                  75                  80
76 Ala Arg Val Asp Ala Leu Phe Glu Phe Cys Glu Lys Leu Asn Ile Glu
77             85                  90                  95
78 Tyr Phe Cys Phe His Asp Arg Asp Ile Ala Pro Glu Gly Lys Thr Leu
79             100                 105                 110
80 Arg Glu Thr Asn Lys Ile Leu Asp Lys Val Val Glu Arg Ile Lys Glu
81         115                 120                 125
82 Arg Met Lys Asp Ser Asn Val Lys Leu Leu Trp Gly Thr Ala Asn Leu
83     130                 135                 140
84 Phe Ser His Pro Arg Tyr Met His Gly Ala Ala Thr Thr Cys Ser Ala
85 145                 150                 155                 160
86 Asp Val Phe Ala Tyr Ala Ala Ala Gln Val Lys Lys Ala Leu Glu Ile
87             165                 170                 175
88 Thr Lys Glu Leu Gly Gly Glu Gly Tyr Val Phe Trp Gly Gly Arg Glu
89             180                 185                 190
90 Gly Tyr Glu Thr Leu Leu Asn Thr Asp Leu Asp Leu Glu Leu Gly Asn
91         195                 200                 205
92 Leu Ala Arg Phe Leu Arg Met Ala Val Asp Tyr Ala Lys Lys Ile Gly
93     210                 215                 220
94 Phe Asn Gly Gln Phe Leu Ile Glu Pro Lys Pro Lys Glu Pro Thr Lys
95 225                 230                 235                 240
96 His Gln Tyr Asp Phe Asp Val Ala Thr Ala Tyr Ala Phe Leu Lys Ser
97             245                 250                 255
98 His Gly Leu Asp Glu Tyr Phe Lys Phe Asn Ile Glu Ala Asn His Ala
99             260                 265                 270
100 Thr Leu Ala Gly His Thr Phe Gln His Glu Leu Arg Met Ala Arg Ile
101         275                 280                 285
102 Leu Gly Lys Leu Gly Ser Ile Asp Ala Asn Gln Gly Asp Leu Leu Leu
103     290                 295                 300
104 Gly Trp Asp Thr Asp Gln Phe Pro Thr Asn Val Tyr Asp Thr Thr Leu
105 305                 310                 315                 320
106 Ala Met Tyr Glu Val Ile Lys Ala Gly Gly Phe Thr Lys Gly Gly Leu
107             325                 330                 335
108 Asn Phe Asp Ala Lys Val Arg Arg Ala Ser Tyr Lys Val Glu Asp Leu
```

```
109               340               345               350
110 Phe Ile Gly His Ile Ala Gly Met Asp Thr Phe Ala Leu Gly Phe Lys
111         355               360               365
112 Ile Ala His Lys Leu Val Lys Asp Gly Val Phe Asp Lys Phe Ile Glu
113     370               375               380
114 Glu Lys Tyr Lys Ser Phe Arg Glu Gly Ile Gly Lys Glu Ile Val Glu
115 385               390               395               400
116 Gly Lys Ala Asp Phe Glu Lys Leu Glu Ala Tyr Ile Ile Asp Lys Glu
117             405               410               415
118 Glu Met Glu Leu Pro Ser Gly Lys Gln Glu Tyr Leu Glu Ser Leu Leu
119         420               425               430
120 Asn Ser Tyr Ile Val Lys Thr Ile Ser Glu Leu Arg
121         435               440
123 <210> SEQ ID NO: 3
124 <211> LENGTH: 1335
125 <212> TYPE: DNA
126 <213> ORGANISM: unknown
128 <220> FEATURE:
129 <223> OTHER INFORMATION: obtained from an environmental sample
131 <400> SEQUENCE: 3
132 atgacagaat ttttcccgga aattccaaag atacagttcg aagggaagga aagcaataac   60
133 cctcttgcct ttaagttcta cgatccagac gaagtaatcg atggaaaacc tctgaaggac  120
134 catttgaaat tctccgttgc tttctggcac acttttgtaa acgaaggtcg agatcccttc  180
135 ggtgacccca ctgctgaaag accctggaac aagtattcgg atcccatgga caaagcgttt  240
136 gcaagagtgg atgctttatt cgaattctgt gagaaactca atattgaata cttttgtttt  300
137 catgacagag acattgcacc cgaagggaaa actctgagag agacgaacaa aattctggac  360
138 aaagttgttg agaaaataaa agaacgaatg aaggaaagca atgtgaaact cctttgggga  420
139 actgccaatc tgttctcaca tcctcggtac atgcacggtg cggcaactac ttgcagcgcc  480
140 gatgttttg catacgctgc tgcacaggtg aaaaaagcgt tggagattac gaaggaactt  540
141 ggaggagaag gatatgtttt ttggggcggt agagaaggat acgaaacctt gctcaacacg  600
142 gatttgggat tggaactcga aaacctcgcg aggttcctca gaatggccgt agagtacgca  660
143 aagaagatag gttttgatgg acagttcctc atagaaccca aaccaaaaga acccacaaaa  720
144 catcagtacg atttcgacgt agcgaccgca tacgccttct tgaaaactca cgatttggat  780
145 gaatacttca agttcaacat agaagctaat cacgcaacac tcgctggtca tactttccag  840
146 catgaattga gaatggccag aatcctcgga aaattcggaa gtatcgacgc aaatcaaggc  900
147 gatcttctgt tgggatggga caccgatcaa tttccaacga acgtatacga tacaactctt  960
148 gccatgtacg aggttataaa agcaggggt ttcacaaaag gtggtctcaa cttcgacgcc  1020
149 aaagtgagac gtgcttctta caaggtagag gatctcttca tcgggcatat agtaggaata  1080
150 gacactttcg cactcggttt caagatagcc tacaaacttg taaaagacgg cgtattcgac  1140
151 agattcgttg aggaaaaata cagaagtttc agagaaggta ttggaaaaga aatattggaa  1200
152 ggaaaagcag attttgaaaa actagaatcg tatataatag acaaagaaga tgttgaactt  1260
153 ccatctggaa aacaggagta tcttgaaagt ttgctcaaca gctatatcgt gaagaccgta  1320
154 tcagaactga ggtga                                                   1335
156 <210> SEQ ID NO: 4
157 <211> LENGTH: 444
158 <212> TYPE: PRT
159 <213> ORGANISM: unknown
161 <220> FEATURE:
162 <223> OTHER INFORMATION: obtained from an environmental sample
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RAW SEQUENCE LISTING   DATE: 08/08/2006
PATENT APPLICATION: US/10/533,241   TIME: 09:31:41

Input Set : F:\56446-20055.01 - Seqlist.txt
Output Set: N:\CRF4\08082006\J533241.raw

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164 <400> SEQUENCE: 4
165 Met Thr Glu Phe Phe Pro Glu Ile Pro Lys Ile Gln Phe Glu Gly Lys
166 1               5                   10                  15
167 Glu Ser Asn Asn Pro Leu Ala Phe Lys Phe Tyr Asp Pro Asp Glu Val
168             20                  25                  30
169 Ile Asp Gly Lys Pro Leu Lys Asp His Leu Lys Phe Ser Val Ala Phe
170         35                  40                  45
171 Trp His Thr Phe Val Asn Glu Gly Arg Asp Pro Phe Gly Asp Pro Thr
172     50                  55                  60
173 Ala Glu Arg Pro Trp Asn Lys Tyr Ser Asp Pro Met Asp Lys Ala Phe
174 65                  70                  75                  80
175 Ala Arg Val Asp Ala Leu Phe Glu Phe Cys Glu Lys Leu Asn Ile Glu
176             85                  90                  95
177 Tyr Phe Cys Phe His Asp Arg Asp Ile Ala Pro Glu Gly Lys Thr Leu
178             100                 105                 110
179 Arg Glu Thr Asn Lys Ile Leu Asp Lys Val Val Glu Lys Ile Lys Glu
180         115                 120                 125
181 Arg Met Lys Glu Ser Asn Val Lys Leu Leu Trp Gly Thr Ala Asn Leu
182     130                 135                 140
183 Phe Ser His Pro Arg Tyr Met His Gly Ala Ala Thr Thr Cys Ser Ala
184 145                 150                 155                 160
185 Asp Val Phe Ala Tyr Ala Ala Ala Gln Val Lys Lys Ala Leu Glu Ile
186             165                 170                 175
187 Thr Lys Glu Leu Gly Gly Glu Gly Tyr Val Phe Trp Gly Gly Arg Glu
188             180                 185                 190
189 Gly Tyr Glu Thr Leu Leu Asn Thr Asp Leu Gly Leu Glu Leu Glu Asn
190         195                 200                 205
191 Leu Ala Arg Phe Leu Arg Met Ala Val Glu Tyr Ala Lys Lys Ile Gly
192     210                 215                 220
193 Phe Asp Gly Gln Phe Leu Ile Glu Pro Lys Pro Lys Glu Pro Thr Lys
194 225                 230                 235                 240
195 His Gln Tyr Asp Phe Asp Val Ala Thr Ala Tyr Ala Phe Leu Lys Thr
196             245                 250                 255
197 His Asp Leu Asp Glu Tyr Phe Lys Phe Asn Ile Glu Ala Asn His Ala
198             260                 265                 270
199 Thr Leu Ala Gly His Thr Phe Gln His Glu Leu Arg Met Ala Arg Ile
200         275                 280                 285
201 Leu Gly Lys Phe Gly Ser Ile Asp Ala Asn Gln Gly Asp Leu Leu Leu
202     290                 295                 300
203 Gly Trp Asp Thr Asp Gln Phe Pro Thr Asn Val Tyr Asp Thr Thr Leu
204 305                 310                 315                 320
205 Ala Met Tyr Glu Val Ile Lys Ala Gly Gly Phe Thr Lys Gly Gly Leu
206             325                 330                 335
207 Asn Phe Asp Ala Lys Val Arg Arg Ala Ser Tyr Lys Val Glu Asp Leu
208         340                 345                 350
209 Phe Ile Gly His Ile Val Gly Ile Asp Thr Phe Ala Leu Gly Phe Lys
210         355                 360                 365
211 Ile Ala Tyr Lys Leu Val Lys Asp Gly Val Phe Asp Arg Phe Val Glu
212     370                 375                 380
```

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PATENT APPLICATION: US/10/533,241   TIME: 09:31:41

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Output Set: **N:\CRF4\08082006\J533241.raw**

```
213 Glu Lys Tyr Arg Ser Phe Arg Glu Gly Ile Gly Lys Glu Ile Leu Glu
214 385             390             395             400
215 Gly Lys Ala Asp Phe Glu Lys Leu Glu Ser Tyr Ile Ile Asp Lys Glu
216             405             410             415
217 Asp Val Glu Leu Pro Ser Gly Lys Gln Glu Tyr Leu Glu Ser Leu Leu
218             420             425             430
219 Asn Ser Tyr Ile Val Lys Thr Val Ser Glu Leu Arg
220         435             440
```

VERIFICATION SUMMARY   DATE: 08/08/2006
PATENT APPLICATION: **US/10/533,241**   TIME: 09:31:42

Input Set : **F:\56446-20055.01 - Seqlist.txt**
Output Set: **N:\CRF4\08082006\J533241.raw**

L:12 M:271 C: Current Filing Date differs, Replaced Current Filing Date